UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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SUPERFUND &
EMERGENCY
MANAGEMENT DIVISION

July 20, 2020

MEMORANDUM

SUBJECT: EPA Comments on the draft Feasibility Study Technical Memorandum #2 (FSTM #2) for Smoky Canyon Mine Superfund Site

FROM: Jennifer Crawford, Remedial Project Manager, U.S. EPA Region 10

Jennifer Crawford
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Date: 2020.07.20 11:37:25 -07'00'

TO: Arthur Burbank, Remedial Project Manager, U.S. Forest Service

This memorandum captures EPA's comments on the draft Smoky Canyon Mine FSTM #2, prepared and submitted by the J.R. Simplot Company.

General & Specific Comments

1. **Cover Options:** EPA environmental engineer and phytoremediation expert Steve Rock was consulted for input on the cover design alternatives within FSTM2. From his review, EPA recommends that an additional alternative for a single deep layer cover amended native-mimicking soil planted (of depth TBD) with coniferous native forest be considered for review in FSTM2. Rationale, references, and details on this comment are included in the attached document. EPA can additionally discuss details via conference call with the Agencies and Simplot.

2. **Preliminary Remediation Goals:** The PRGs were identified in FSTM1, however only a final chosen value was provided in Table 3-3 and in some cases a range was listed instead of clear summary numerical identification of all factors used in determining the final PRG. EPA requests that FSTM2 add an expanded PRG table 3-3 to the document, building on Table 3-3 from the FSTM1. This updated Table 3-3 would include specifics for all COCs with HQ>1: ARAR criteria value, naturally occuring COC background concentration (as applicable), and the Risk Based criteria. Including these values in one table allows for clear identification and documentation of the chosen PRG for remedy evaluation and begins the specific incorporation of background values to the FS process. The requested format is attached and is consistent with current FSTM1 PRG work ongoing at Conda Mine. The added/updated table 3-3 should also be referenced throughout the document during discussion of alternatives and PRGs.

3. **Identification of "Target Cover Areas":** Add discussion to Section 2.3.1 of the specific decision criteria used for determination of which areas are included for cover remediation and which are not proposed for covers (i.e. Panel A). A table with the all contaminated soil areas listed, decision criteria, specifics regarding loading rates, groundwater travel times and proposed reduction percentage / concentration needs to be identified for quantified assessment of the target areas for cover as included in FSTM2.

4. **Section 2.3.1.3 Alternative WG-3 and Section 3.3.3 AG-3 – Institutional Controls (ICs)**: ICs should not be identified as a stand-alone alternative. ICs can be used for short-term and long-term use during the RI/FS and then after only as a component of the final remedy. As identified in the NCP § 300.430, section iii (D): "EPA expects to use institutional controls such as water use and deed restrictions to

supplement engineering controls as appropriate for short- and long-term management to prevent or limit exposure to hazardous substances, pollutants, or contaminants. Institutional controls may be used during the conduct of the remedial investigation/feasibility study (RI/FS) and implementation of the remedial action and, where necessary, as a component of the completed remedy. The use of institutional controls shall not substitute for active response measures (e.g., treatment and/or containment of source material, restoration of ground waters to their beneficial uses) as the sole remedy unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during the selection of remedy"

5. **Section 2.3.1.6 Alternative WG-6 and 2.3.2.4 Alternative SW-4 – Enhanced Dinwoody Covers, ICs and MNA**: Request that WG-6 be carried forward through the detailed analysis. The rationale states that performance of the Enhanced Dinwoody cover is similar to WG-7 Geomembrane, however the covers are significantly different. Inclusion of the WG-6 in the detailed selection also allows clear documentation for remedy selection at Smoky Canyon in direct comparison and consistency with other phosphate mining sites undergoing CERCLA cleanup within SE Idaho.

6. **Section 2.3.4.4 Alternative S-4 – 5-Foot Dinwoody or Salt Lake Formation/Chert Covers on Uncovered Areas of ODAs and Rock Covers on Soils in Seep and Riparian Areas:** Alternative S-4 is not retained for detailed analysis, as stated "Alternative S-4 would provide the same level of effectiveness as Alternative S-3. The thicker cover would not provide additional protection. It has a significantly higher cost and is therefore NOT RETAINED." Identification of performance or infiltration reduction for both the 2-foot (S-3) and 5-foot (S-4) is not identified in each respective section, so the statement that protection is not increased with a thicker cover is not supported. Provide further information on this determination. It is recommended that the 5-foot cover in S-4 be retained for detailed analysis, as it is consistent with completed cover installed at the Pole Canyon ODA and has current performance data available.

7. **Section 3.1:** Add reference for the nine criteria origin within the National Contingency Plan (40CFR300.430(e)(9)).

8. **Section 4.3:** Selected alluvial groundwater remedy AG-3 includes institutional controls only. This is an inappropriate remedy selection for the site, as ICs cannot constitute the entire remedy for an exposure matrix unless specific requirements (not addressed in FSTM2) are met as identified in the NCP and EPA guidance. In addition, alternative AG-3 does not meet expectations for the return of usable ground waters to their beneficial uses. Based on the 3 alternatives brought forward for this evaluation, only AG-5 is a viable option for use based on EPA policy and CERCLA guidance. Reference sections from the NCP and IC Guidance are below.

§ 300.430 Remedial investigation/feasibility study and selection of remedy.
(iii) *Expectations.* EPA generally shall consider the following expectations in developing appropriate remedial alternatives:
(D) EPA expects to use institutional controls such as water use and deed restrictions to supplement engineering controls as appropriate for short- and long-term management to prevent or limit exposure to

hazardous substances, pollutants, or contaminants. Institutional controls may be used during the conduct of the remedial investigation/feasibility study (RI/FS) and implementation of the remedial action and, where necessary, as a component of the completed remedy. The use of institutional controls shall not substitute for active response measures (e.g., treatment and/or containment of source material, restoration of ground waters to their beneficial uses) as the sole remedy unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during the selection of remedy.
(F) EPA expects to return usable ground waters to their beneficial uses wherever practicable, within a timeframe that is reasonable given the particular circumstances of the site. When restoration of ground water to beneficial uses is not practicable, EPA expects to prevent further migration of the plume, prevent exposure to the contaminated ground water, and evaluate further risk reduction

Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites (OSWER 9355.0-89 EPA-540-R-09-001 December 2012):
CERCLA. Under the NCP, the remedy selection process under CERCLA is guided by several expectations. These include: (1) treatment should be used wherever practicable to address principal threat wastes; 10 (2) groundwater should be returned to its beneficial use wherever practicable in a reasonable time frame; 11 and (3) ICs should supplement engineering controls as appropriate to prevent or limit exposure, but ICs normally "shall not substitute for active response measures…as the sole remedy unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during the selection of remedy."12Thus, consistent with the NCP, an IC-only remedy may be appropriate under certain circumstances. The remedy selection process that culminates in an IC-only ROD should be carried out consistent with the statute (e.g., on-site remedial actions must meet or waive ARARs pursuant to section 121(d)) and the NCP, including provisions which address expectations (e.g., 40 CFR 300.430(a)(1)(iii)(D)), developing a range of alternatives (40 CFR 300.430(e)(1) and (2)), and analyzing alternatives through the nine-criteria analysis (40 CFR 430(e)(9)). ICs often play an important role by minimizing the potential for exposure for residual contamination and by protecting engineered remedies; however, as provided in the NCP, ICs are not intended to be a way "around" treatment or groundwater restoration.

Comments on Smoky Canyon FSTM2 Cover System Remedial Options by Steve Rock, EPA.

Bio: **Steve Rock** is an Environmental Engineer in the Remediation and Contaminant Branch at EPA's National Risk Management Research Laboratory in Cincinnati, Ohio and has worked for the EPA since 1994. Steve manages field projects using phytoextraction, phytodegradation, plume control and vegetative. He is the author of several phytotechnology publications, including acting as team leader on the EPA's Introduction to Phytoremediation, and a chapter in the Standard Handbook of Environmental Engineering. He co-chairs the RTDF Action Team on Phytoremediation and has three subgroups researching the phytoremediation issues of petroleum hydrocarbons, chlorinated solvents, and vegetative covers for waste containment. He participates in EPA in-house research and provides technical assistance to EPA regional staff on questions of phytoremediation. Steve was a member of the ITRC Phyto team and an instructor in the ITRC training classes. He is a member of the ITRC Phyto Revision Team.

Recommendation for the Smoky Canyon cover system:

A monolithic cover replanted with coniferous forest. The soil for a pine forest ET cover should be a single deep layer that replicates the native soil closely. The forest roots are deeper and more extensive than grass roots, so in an ET cover those roots can draw deeper from the soil "sponge". A simple exploration can reveal how deep are the natural soils in nearby undisturbed pine forests. The pine forests ET cover does not need multiple layers of different kinds of soil, clay, or fabrics.

Considerations:

Currently there are four cover profiles under consideration for the Smoky Canyon Superfund site. They have been carefully modeled and tested in lysimeters on site. The work that has gone into those tests and models is extensive. They show that an alternative cover can work on this site and the only debate is exactly which cover design would be best for the site- for the hydrology, ecology, economy, and regulatory acceptance.

The covers suggested, with diversion layers, impermeable layers, and capillary breaks, work well on paper or perform well in test plots but are prone to failure in actual field installations. Roots intrude, fine grain materials fill in among larger grain materials, carefully placed layers shift with freeze thaw cycles, and planted grasses yield to trees and shrubs – as Craig Benson said, "Ultimately nature is going to make the mine cover similar to the surroundings."

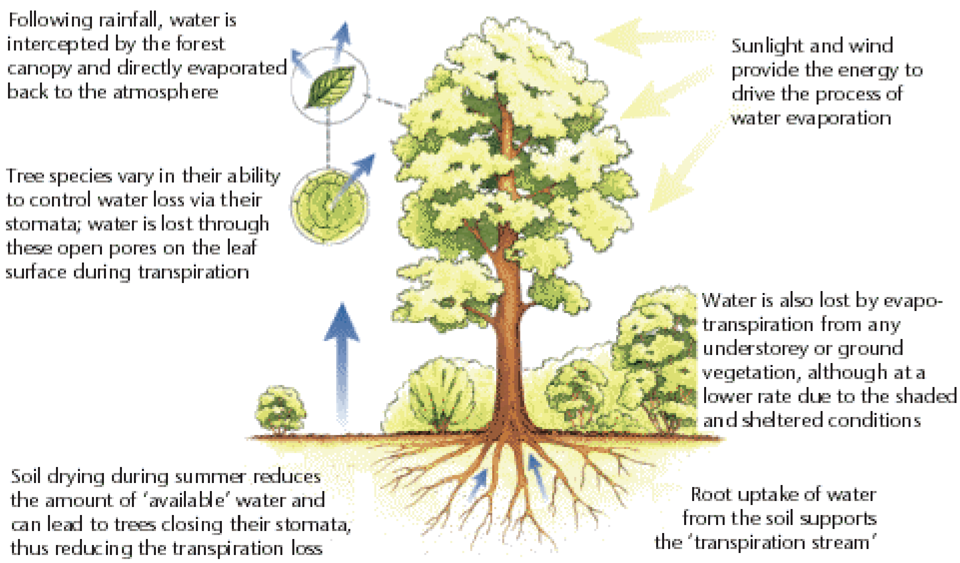
Recommended is an evapotranspiration (ET) cover, but not the exact cover designs identified in FSTM2. None of the covers proposed considers the ecology of the area. Mixed coniferous forest is the dominant ecosystem for the area. http://ecologicalregions.info/data/id/id_front.pdf

Each of the suggested cover systems use grass as the vegetation layer, which is not long term viable for the site. The site will inevitably transition from grass land to shrub and tree – it should be planted from the beginning with trees that form the natural ecosystem for the area.

Planting a coniferous forest instead of grass makes a superior ET cover for three reasons: increased precipitation interception, extended season transpiration, and the addition of understory transpiration and water consumption. A cover that incorporates a natural forest ecosystem will work to prevent rain and snow from percolating into waste, be simpler, more resilient, use fewer resources, will grow better and become more efficient every year. In addition, a forest cover will create wildlife habitat and sequester carbon. In the pages below I highlight some research into those areas and explain how they impact the cover selection for the Smoky Canyon site.

Interception: Most cover models, including those used in the Smoky Canyon designs, use potential evapotranspiration as a value derived from weather data. These models do not understand that different

plant ecosystems have different ET values. In a conifer forest a large percentage of precipitation is intercepted by the vegetation; it never reaches the ground.
There are numerous studies that measure high percentages of interception in coniferous forests, including one long running watershed size study in England:
https://www.forestresearch.gov.uk/research/forest-hydrology/forest-hydrology-how-much-water-do-forests-use/
Coalburn, in Britain is the home of a 35 year forest hydrology research catchment study, providing a unique record of the long-term effects of conifer afforestation on water supplies.
They found that “Trees and forests have the ability to use more water than shorter types of vegetation. In general, conifers catch between 25 to 45% of annual rainfall by interception, compared to 10 to 25% for broadleaves and almost 0% for grass.”



How trees use water Forestry Commission Information Note 65: Water use by trees.

Studies published by the UN (Forests, Climate, and Hydrology: Regional Impacts (UNU, 1988, 217 pages) also show that coniferous forests intercept about 20-25% of precipitation:
TABLE 1. Ratio of precipitation reaching the soil surface to precipitation amount falling on forest**.**

Forest type	**Average forest density**	**Portions of precipitation reaching the surface**		
		Oct.-Apr.	**May-Sept.**	**Year**
Spruce	0.8	0.75	0.75	0.75
	0.4	0.80	0.80	0.80
Pine	0.8	0.80	0.80	0.80
	0.4	0.90	0.90	0.90
Pine-spruce	0.8	0.75	0.75	0.75
	0.4	0.85	0.85	0.85
Mixed	0.8	0.92	0.80	0.85
	0.4	0.97	0.85	0.90
Deciduous	0.8	1.00	0.85	0.90
	0.4	1.00	0.90	0.93

Deciduous brushwood with coniferous undergrowth	1.0	0.95	0.80	0.85

Krestovsky 1969a; Krestovsky and Sokolova 1980

Monthly precip average for the Smoky Canyon varies between 1.5 to 2.5 inches. Decreasing that by 25% or more due to canopy interception would decrease the size of the soil sponge needed for an ET cover and the eliminate the need for interception and diversion layers.

2018 Annual Report Pole Canyon NTCRAs
Performance and Effectiveness Monitoring
Smoky Canyon Mine

July 2019

Table 3-1
Monthly Precipitation Totals for the Smoky Canyon Mine (2004–2018)

Month	Monthly Precipitation (inches)															
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	15-Year Average (2004-2018)
December[1]	**2.81**	1.64	**4.31**	1.94	**2.18**	2.02	1.52	2.73	0.97	2.74	1.83	1.77	1.39	3.31	1.63	2.19
January	2.27	2.08	**4.18**	0.85	**2.72**	**2.85**	1.99	**2.61**	2.24	1.63	2.11	1.01	**3.33**	**4.89**	2.09	2.46
February	1.35	1.40	1.41	1.50	1.86	1.99	0.97	1.73	**2.25**	0.99	**4.72**	0.96	1.54	**5.5**	**2.08**	2.02
March	1.17	**2.16**	**2.07**	1.19	**2.38**	**2.56**	0.86	**3.32**	1.10	1.84	**2.34**	0.79	**2.56**	**2.46**	**2.80**	1.97
April	1.52	1.38	**2.37**	1.89	1.31	**2.54**	**3.36**	**4.24**	2.22	**2.47**	1.57	1.74	2.00	**3.09**	**2.58**	2.29
May	**4.19**	**4.13**	1.02	0.47	**2.60**	2.56	1.91	**3.14**	1.77	**2.61**	0.93	**5.40**	**3.64**	1.89	2.21	2.56
June	**4.39**	**3.24**	0.91	0.77	**2.33**	**6.31**	**2.89**	**2.09**	0.11	0.09	1.60	1.38	1.01	1.12	1.39	1.98
July	0.78	0.52	**0.90**	**1.51**	0.02	0.57	0.26	**1.92**	**0.96**	**2.00**	0.63	**1.63**	0.27	0.15	0.24	0.82
August	**2.63**	1.52	1.22	1.09	0.67	1.11	**1.78**	**2.20**	0.04	1.12	**5.06**	1.45	0.64	1.36	1.27	1.54
September	**2.89**	1.31	**2.14**	1.50	1.69	0.29	0.50	0.36	0.42	**2.92**	**4.34**	**2.68**	**4.82**	**3.13**	0.18	1.94
October	**3.74**	1.39	1.67	**3.00**	0.66	**2.25**	**2.79**	**2.66**	1.67	1.84	0.91	0.53	**5.79**	0.75	**2.43**	2.14
November	0.72	**2.58**	**3.02**	1.03	**2.66**	0.21	**2.79**	1.85	1.92	1.34	**2.86**	**2.25**	1.12	**2.97**	1.67	1.93
Total	**28.46**	23.35	**25.22**	16.74	21.08	**25.26**	21.62	**28.85**	15.67	21.59	**28.90**	21.59	**28.11**	**30.62**	20.57	*24.08*

Understory and decomposing plant layer: The ET part of a forest is three dimensional including the tree canopy, the plants that grow beneath the canopy, and decomposing plant-animal biome on the forest floor. A recent article compared natural soils in various forests for their water holding capacity:

Comparing the Water-holding Characteristics of Broadleaved, Coniferous, and Mixed Forest Litter Layers in a Karst Region1 August 2018

Qiuwen Zhou, David M. Keith, Xu Zhou, Mingyong Cai, Xingfen Cui, Xiaocha Wei, Yaxue Luo

https://bioone.org/journals/mountain-research-and-development/volume-38/issue-3/MRD-JOURNAL-D-17-00002.1/Comparing-the-Water-holding-Characteristics-of-Broadleaved-Coniferous-and-Mixed/10.1659/MRD-JOURNAL-D-17-00002.1.full

Abstract

Karst forests are often located in mountainous regions, and because of various geological factors both soil and water loss are major conservation concerns. We investigated the water-holding characteristics of 3 typical karst forest types through field sampling and laboratory experiments. The results showed that (1) the total litter mass of the coniferous forest was significantly higher than that of either the mixed forest or the broadleaved forest; (2) the mass of semi decomposed litter was significantly higher than that of undecomposed litter; (3) the litter layers of the mixed and coniferous forests had similar maximum water-holding capacity, whereas the maximum water-holding capacity of the broadleaved forest was significantly lower; (4) the maximum water-retention capacity of both the mixed and coniferous forests was significantly higher than that of the broadleaved forest; and (5) water-absorption rate and maximum water-holding capacity varied significantly across forest and litter types, with the mixed forest and undecomposed litter layers tending both to hold more water and to absorb water more quickly than the other forest types or the semi decomposed litter layer. Because of the elevated water-holding capacity and absorption rate of the mixed forest in karst regions, special emphasis on the conservation of this complex forest ecosystem is critical from both hydrological and ecological perspectives.

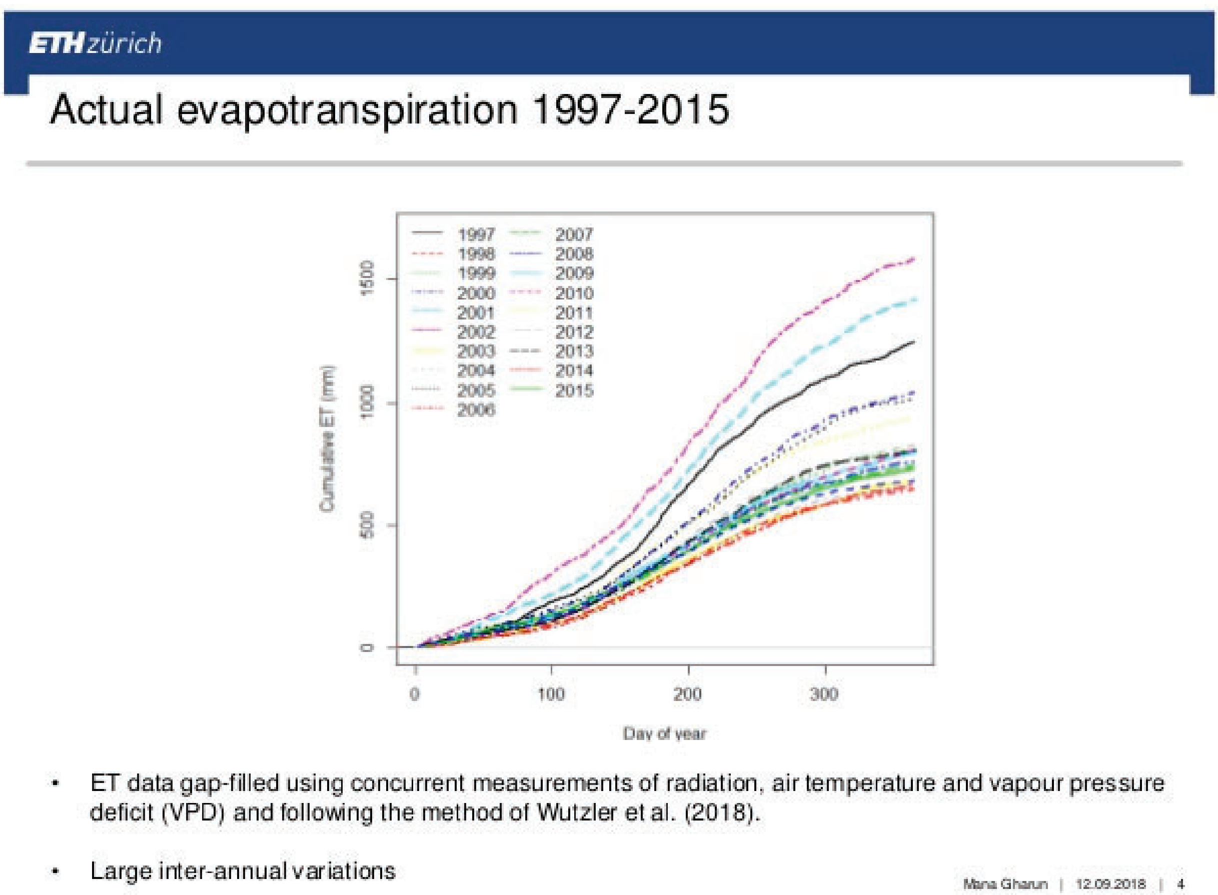
An article that suggests that modeling needs to consider biological as well as meteorological data:

Modeling water uptake on coniferous forest Oregon watershed 10: synthesis
Waring, R. H.; Running, S. W.; Holbo, H. R.; Kline, J. R. 1973. Modeling water uptake on coniferous forest Oregon watershed 10: synthesis. Seattle: University of Washington; Coniferous For. Biome Internal Rep. 79. 20 p.
Abstract:
In the Coniferous Forest Biome, many of the understory as well as dominant plants are evergreen and thus water uptake is a year around process. The flow of water from the soil through plants to the atmosphere affects the entire forest ecosystem. As water is evaporated, it absorbs heat and influences the energy budget; as it is conducted through vascular plants, it carries nutrients; and as it is removed from the soil, it reduces seepage and water available to free-living soil organisms.
It is important in an ecosystem model that the hydrologic, biologic, and meteorological processes be coupled in a realistic manner. It is the objective of this report to suggest a coupling that is both practical and theoretically sound.

Nothing beats long term measurements. Years of coniferous forest measurement show ET values of 500 mm to nearly 1500 mm of ET- a great deal more than the 200 to 250 mm calculated for the covers for Smoky Canyon:

Twenty years of evapotranspiration measurements over a sub-alpine coniferous forest in Switzerland

https://www.slideshare.net/ICOS_RI/twenty-years-of-evapotranspiration-measurements-over-a-subalpine-coniferous-forest-in-switzerland/4



In the report: FIELD HYDROLOGY OF THE SIMPLE 1 AND GCLL FINAL COVER TEST SECTIONS FOR THE EAST OVERBURDEN PIT AND THE NORTH PIT BLACKFOOT BRIDGE MINE, ANNUAL REPORT FOR CALENDAR YEAR 2016, Report No. WGL-17-23 by Dr. Craig H. Benson, two cover systems are measured near the Smoky Canyon mine for several years. From the Report, "Hydrological and meteorological data collected from the Simple 1 and GCLL test sections for the East Overburden Pit (EOP) and the GCLL test section for the North Pit (NP) at Blackfoot Bridge Mine are described in this report. Data were collected over the period 5 December 2013 to 31 December 2016 for the EOP test sections. For the NP test section, data were collected from 13 October 2016 to 31 December 2016. Monitoring systems at the EOP and NP are collecting all of the required data. The 2016 water balance from the test sections is summarized as follows:

Water Balance Quantity (mm)	EOP		NP
	Simple 1	GCLL	GCLL
Precipitation	567.2		139.2*
Runoff	1.3	1.2	59.8
Lateral Flow	143.1	279.6	1.2
Change Storage	48.3	63.1	11.7
Evapotranspiration	244.9	216.7	66.9
Percolation	128.7	0.8 – 1.4	0.0

In this study the average annual precipitation was 567 mm. Using the UK and UN study's estimates for precipitation interception of 25%-45% for a pine forest, the actual precipitation that reaches the ground would be between 425 and 311 mm. This significantly changes the water balance for a cover system.

In addition, the Zhou paper indicates that a coniferous forest removes 25% more than grass, considering extended season and understory. Therefore, the ET contribution of a forest cover is at least 305 mm, or 61 mm more the 244.9 mm of the Simple 1 grass cover. The Swiss forestry measurements indicate that ET in pine forests varies between 500 and 1500 mm per year.

Combining those two effects, interception and increased evapotranspiration, makes the pine forest cover significantly more effective than the grass cover, which the lysimeter measured at an average of 128 mm percolation. A pine forest cover can use at least 200 to 500 mm more water per year than a grass cover. A pine forest cover could prevent all percolation with a comfortable safety margin.

The soil for a pine forest ET cover should be a single deep layer that replicates the native soil closely. The forest roots are deeper and more extensive than grass roots, so in an ET cover those roots can draw deeper from the soil "sponge". A simple exploration can reveal how deep are the natural soils in nearby undisturbed pine forests. The pine forests ET cover does not need multiple layers of different kinds of soil, clay, or fabrics.

Media/Pathway	Remedial Action Objective	Risk Based Value(s)	ARAR(s)	Natural Background	PRG(s)
Groundwater RAO (Human Health)	Reduce the concentration of COCs in groundwater to levels that are protective of human health associated with domestic water supply and comply with applicable, or relevant and appropriate requirements (ARAR).		**Selenium:** 0.005mg/L[7,10] **Arsenic:** 0.010 mg/L[7] **Cadmium:** 0.005 mg/L[7,10] **Thallium:** 0.002 mg/L [7,10]; 0.0005 mg/L[7] **Uranium:** 30 µg/L[7]		
Surface Water RAO (Human Health)	Reduce the concentration of COCs in surface water to levels that are protective of human health and comply with applicable, or relevant and appropriate requirements (ARAR).		**Selenium**: 29 ug/L[1] ; 250 ug/L[2] **Arsenic**: 0.018 ug/L[3;] ; 0.14µg/L[3]; 6.2 ug/L[4] **Cadmium**: 5µg/L if designated use of water body is DWS[7] **Iron**: **Thallium**: 0.017 ug/L[1]; 0.023 ug/L[2] **Uranium**: 30 µg/L if designated use is DWS[7]		
Surface Water RAO (Eco Risk)	Reduce the concentration of COCs in surface waters to levels that are protective of aquatic life and wildlife and comply with applicable, or relevant and appropriate requirements (ARAR).		**Arsenic:** 340 µg/L CMC[5;] 150 µg/L CCC[5] **Selenium Water**: 3.1 µg/L[5] **Se Tissue Based:** Fish egg/ovary: 24.5 mg/kg dw; Fish whole body 12.5 mg/kg dw; Fish muscle 12.8 mg/kg dw		

			Cadmium: 0.6 µg/L[6] **Zinc:** 120 µg/l CCC[6]		
Soil RAO (Eco Risk)	Reduce or eliminate unacceptable risks from exposure to COCs in soils (including overburden piles and areas downgradient of ODAs) to protect wildlife and comply with applicable, or relevant and appropriate requirements (ARAR).		**Selenium:** **Chromium:** **Vanadium:**		
Sediment RAO (Eco Risk)	Reduce or eliminate unacceptable risks from exposure to COCs in sediments (including areas downgradient of ODAs) to protect ecological receptors and comply with applicable, or relevant and appropriate requirements (ARAR).		**Selenium:** **Antimony:** **Arsenic:** **Barium:** **Cadmium:** **Chromium:** **Nickel:** **Vanadium:** **Zinc:**		
Source Control/Groundwater RAO	Reduce the loading of COCs in groundwater discharging to surface water to protect aquatic life and human health uses, and comply with applicable, or relevant and appropriate requirements (ARARs).		**Selenium:** 0.005mg/L[7,10] **Arsenic:** 0.010 mg/L[7] **Cadmium:** 0.005 mg/L[7,10] **Thallium:** 0.002 mg/L[7,10] 0.0005 mg/L[7] **Uranium:** 30 µg/L[7]		
Source Control/Soil RAO	Handle soils (including overburden materials and areas downgradient of ODAs) in a manner that minimizes COC releases, migration, and subsequent transport into downstream habitat, to protect aquatic life and		**Selenium:** **Chromium:** **Vanadium:**		

	human health uses, and comply with applicable, or relevant and appropriate requirements (ARARs).				

[1] The “water & fish only” criterion applies to waters designated as “Domestic Water Supply” (IDAPA 58.01.02.150.09 waterbody US-10 and IDAPA 58.01.02.160.02 waterbody B-23)

[1] The “fish only” criterion applies to all waters of the Site outside of those designated for “Domestic Water Supply” (IDAPA 58.01.02.150.09 waterbody US-11 and IDAPA 58.01.02.160.02 waterbody B-25)

[3]EPA National Recommended Water Quality Criteria – Human Health for the consumption of Water + Organism and Organism only.

[4] EPA Disapproval of Idaho’s Arsenic Human Health Water Quality Criteria, and follow-up letter to Barry Burnell, DEQ, from Daniel Opalski, EPA Region 10, dated September 27, 2016, Re: Arsenic Human Health Water Quality Standards for Surface Waters in Idaho

[5]Criteria for Protection of Aquatic Life water column value applicable in the absence of fish tissue data (IDAPA 58.01.02.210 Table 1)

[6]Criteria for Protection of Aquatic Life Chronic Criteria (IDAPA 58.01.02.210, Table 1)

[7]EPA National Primary Drinking Water Regulations, Maximum Contaminant Level (MCL) and MCL Goal (MCLG) where MCLG >0.

[8]EPA National Recommended Water Quality Criteria – Aquatic Life: CMC (Criterion Maximum Concentration) & CCC (Criterion Continuous Concentration)

[9]EPA Approval of Idaho’s New Site-Specific Selenium Aquatic Life Criterion at IDAPA 58.01.02.287.01, Subsection of the Blackfoot Subbasin, — Blackfoot River (7/2019)

[10] IDAPA 58.01.11 Idaho Groundwater Quality Rule